Table 1. Patient Characteristics, Presenting Features and ISS Stage

Characteristics	
Gender	
Male	3
Female	10
Age at Diagnosis	
Mean	43 years
Median	43 years (range 34-48)
Diagnosis	
Multiple Myeloma	12
POEMS syndrome	1
Feature	**n (%)**
HGB < 100 g/L	6/13 (46.4)
Calcium > 2.75 mmol/L	1/13 (7.6)
Creatinine > 90 μmol/L	5/13 (38.5)
Albumin < 35 g/L	7/13 (53.8)
One or more lytic lesions	9/13 (69.2)
Clonal plasma cells > 10%	8/13 (61.5)
β2-microglobulin	
< 3.5 mg/L	4/13 (30.8)
3.5 mg/L - 5.5 mg/L	4/13 (30.8)
> 5.5 mg/L	5/13 (38.5)
Measurable M-protein	8/13 (61.5)
Monoclonal protein	
IgG	8/13 (61.5)
IgM	0/13
IgA	0/13
Light Chains	
kappa	5/13 (38.5)
lambda	6/13 (46.4)
ISS	
Stage 1	4/13 (30.8)
Stage 2	4/13 (30.8)
Stage 3	5/13 (38.5)

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SINGLE VERSUS TANDEM AUTOLOGOUS STEM CELL TRANSPLANTATION (ASCT) FOR MULTIPLE MYELOMA PATIENTS AND ROLE OF SECOND SALVAGE TRANSPLANT: A SINGLE CENTER PROSPECTIVE PHASE II STUDY

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The role of tandem transplants as well as a later salvage second transplant has been in the center of interest for many myeloma investigators. Also, the need for tandem ASCT in patients (pts) achieving very good partial remission (VGPR) or complete remission has not been studied prospectively. We conducted a prospective phase II clinical trial in which enrolled myeloma pts are assessed after the first ASCT and offered either 2nd tandem ASCT if they achieve ≤ PR or maintenance if they achieve ≥ VGPR. These latter pts received 2nd salvage transplant after relapse. The conditioning regimens used were different for the two ASCT: Busulfan 0.75 mg/kg PO q 6 hr days -8 through -5, Cyclophosphamide (CP) 60 mg/kg IV days -3 and -2, and Etoposide 10 mg/kg IV days -4 to -2 for the first ASCT, and 96 hr (days -6 to -3) continuous IV CP 6 gr/m^2 and total body irradiation (TBI) 600 cGy (days -2 and -1) for the second ASCT. Etoposide was omitted if pts were ≥ 65 year old, and TBI was substituted by melphalan 140 mg/m^2 if prior radiation did not allow TBI. Between the years 2001-2009, 76 pts were enrolled. Of the 31 pts planned to have tandem ASCT, 20 received tandem ASCT and 2 additional pts had tandem auto-allo transplants. The primary reasons for not receiving the planned tandem ASCT were lack of socioeconomic resources and physical co-morbidities. Maintenance treatment was offered to both groups of pts. There were no treatment related mortalities in the ASCT pts. We compared the progression-free (PFS) and overall (OS) survival following the first ASCT between pts who received tandem ASCT (n = 20) and pts who received single ASCT (n = 54). The median PFS for tandem pts was 27 mo (range, 10-93) versus 28 mo for single ASCT (range, 4-99) (P = 0.889); the OS was 38 mo (range, 11-120) versus 72 mo (range, 5-136), respectively (P = 0.293). At the present time, a total of 7 (35%) and 30 (55%) pts are still alive in the tandem and single ASCT groups, respectively. Among the tandem pts, 2 underwent salvage ASCT and one non-myeloablative allogeneic transplant (allo-SCT); while in the single ASCT group 6 had salvage ASCT and 6 had allo-SCT. All salvage transplants were done at a median of 37 mo (range, 8-91) from 1st ASCT. In conclusion, pts who achieve ≥ VGPR after 1st ASCT have similar PFS and may be better OS than pts who had tandem ASCT. Thus, the use of such response criteria may identify a group of lower risk pts that will do well without the upfront tandem ASCT.

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AUTOLOGOUS AND ALLOGENIC STEM CELL TRANSPLANTATION RESULTS IN MULTIPLE MYELOMA PATIENTS – SINGLE CENTER STUDY

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Introduction: Multiple myeloma is a hematologic malignancy which best responses to high dose therapies (HDT). HDT with autologous stem cell transplantation (ASCT) is demonstrated for multiple myeloma treatment, although some studies suggest allogenic stem cell transplantation as better choice for younger patients. Several studies have shown the efficacy of intensive chemotherapy in increasing progression- free survival (PFS) and overall survival (OS) rates.

Patients and Methods: During study time, from 1992 till October 2011, we submitted 312 Multiple Myeloma patients. More than half of patients were male (male/female: 197/115). Median age of patients was 50. They underwent autologous stem cell transplantation except fifteen which received allogenic stem cell transplantation. Fifty six from 297 (18.8%) ASCT followed as outpatient. ASCT patients received high dose melphalan (100 mg/m2) for 2 days and allogenic stem cell transplanted (ALSCT) patients were conditioned with fludarabin (30 mg/m2) for 5 days and melphalan (100 mg/m2) for 2 days. Nearly total of patients received stem cells via peripheral blood source (only four received bone marrow). All patients received granulocyte colony- stimulating growth factor.

Results: During median follow up of 22 months (1-165), 280/312 (89%) are alive. Eighty eight percent of patients were in complete remission before transplantation. Neutrophils (ANC≥0.5 ×10 9/L) and platelets (≥ 20 ×10 9/L) recovered in median times of 12 and 18 days, respectively. Fourty percent of allogenic transplanted patients affected with acute Graft Versus Host Disease with preferable grade I and II. In ALSCT group with median follow up of nine months relapse was not seen. The cumulative incidence of relapse in two years was 21.2% (CI: 15.9- 27%). Two years disease free survival (DFS) and overall survival (OS) was 75.7% (SE: 2.9%), 92.3% (SE: 7.4%) with p = 0.422 and 89.5% (SE: 2.1%), 92.3% (SE: 7.4%) with p = 0.96 in ASCT and ALSCT, respectively.

Conclusion: In this retrospective study, we found that although the two years OS were equal in two groups, but the greater DFS in ALSCT group shows less relapse rate in this group. The median duration of hematologic recovery after ASCT and ALSCT did not differ significantly. The most common cause of death in ASCT was relapse. Similarly to other studies, relapse rate after allogenic transplantation is less than autologous. There is no significant p value in OS and DFS because of low cases of ALSCT.

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CAN PATIENTS AGE 65 AND OLDER EXPERIENCE THE SAME OUTCOMES COMPARED TO PATIENTS YOUNGER THAN AGE 65 FOR AUTOLOGOUS STEM CELL TRANSPLANTATION IN MULTIPLE MYELOMA? A SINGLE INSTITUTION REVIEW

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High dose melphalan followed by an autologous stem cell transplant has been shown to improve progression-free and overall survival in the treatment of multiple myeloma. It is unknown whether the age of a patient receiving an autologous stem cell transplant for multiple myeloma has an impact on treatment-related mortality and overall outcome.

A retrospective review was performed of multiple myeloma patients transplanted at Temple Bone Marrow Transplant program

from 2000-2011. Patients included in the analysis all achieved CR1 or PR1 by CIBMTR definition prior to transplant. Patients who received tandem transplants, allogeneic transplants, or who were transplanted on clinical protocol were excluded. Disease status prior to transplant and disease status 100 days after transplant was recorded for both patients younger than 65 and 65 years of age and older.

Data from transplants of 117 patients were analyzed. 32 patients (27%) were age 65 and older, and 85 patients (73%) were younger than age 65. Prior to transplant, 20/32 patients (63%) age 65 and above were in CR or VGPR compared to 23/85 (27%) of patients younger than age 65. At 100-day restaging after transplant, 25/32 patients (78%) age 65 and above achieved a CR or VGPR compared to 44/85 patients (52%) younger than 65. There was one transplant-related death in each age group corresponding to a transplant-related mortality of 3% and 1% in the older and younger age groups, respectively. Two patients who were both younger than age 65 had evidence of progressive disease at 100-day restaging.

Based on our single-institution analysis, multiple myeloma patients age 65 and above have experienced similar outcomes compared to younger patients with respect to transplant-related mortality and disease status 100-days after transplant. Specifically both age groups experienced a consolidative benefit to high-dose therapy followed by autologous SCT. Prospective studies evaluating the impact of age on transplant outcome should be performed for further investigation.

Table 1. Characteristics of Myeloma Patients Transplanted at Temple from 2000-2011

Number of Patients	117
Median Age	58
Range of Ages	40-77
Age 65 and greater	32
Younger than Age 65	85
Number of Males	70
Number of Females	47
IgG Subtype	62
IgA Subtype	24
Free Kappa Light Chain	16
Free Lambda Light Chain	11
Other (IgD, Oligoclonal, Non-secretory)	4
Median Time from diagnosis to BMT	11.5 months
Median CD34 dose	5.56E + 06 cell dose/kg

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SUCCESSFUL STEM CELL MOBILIZATION AND ENGRAFTMENT IN HEAVILY PRETREATED MULTIPLE MYELOMA PATIENTS WITH PRIOR HIGH DOSE MELPHALAN AND AUTOLOGOUS STEM CELL TRANSPLANTATION

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Salvage second autologous transplantation for patients with relapsed multiple myeloma (MM) after prior autologous transplantation has shown to be beneficial in particular if the first remission is longer than 12-18 months. In addition second salvage autologous transplant may be used in the contest of progressive refractory myeloma for temporarily disease control or for hematopoietic reconstitution after prior extensive therapy. Customarily, patients with multiple myeloma who received prior alkylating agents or autologous transplantation with high dose Melphalan are considered non transplant candidate because of the deleterious effects on stem cell collection. Plerixafor is a chemokine receptor -4- antagonist which is approved by FDA for use in combination with G-CSF for mobilization of CD34+ stem cells in patients with NHL and multiple myeloma. We have explored the feasibility of Plerixafor and G-CSF in stem cell collection for second salvage autologous transplantation in 4 consecutive patients with multiple myeloma who underwent prior extensive therapy including prior autologous transplantation with Melphalan-200. Patient characteristics, chemotherapy used and interval between first and second salvage transplant are shown in Table 1. All Patients received GCSF at dose of 10 mcg/KG for 4 days in AM, Plerixafor on the evening of the 4th night and subsequent nights prior to apheresis at a dose of 0.24 mg/kg. The number of apheresis procedures were 2 in two patients and 3 in two patients. The number of CD34 + cells collected were 4.25, 3.06, 3.63, 3.78 million cells/Kg. All the patients engrafted successfully after the second transplant. Neutrophils engraftement were at day 10, 12, 12 and 11 while platelet engraftment were at day 10, 15, 32 and 19 respectivlely for the four patients.

Our Data shows the feasibility of stem cell collection in heavily pretreated MM patients including high dose Melphalan and autologous stem cell transplantation. Prospective studies are needed to confirm such feasibility. Such approach may have future clinical application in eliminating minimal residual disease after the first autologous transplant when used in MM patients with planned upfront tandem autologous transplant.

PEDIATRIC DISORDERS

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A TREOSULPHAN BASED REDUCED TOXICITY CONDITIONING PROTOCOL FOR THALASSAEMIA MAJOR

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We present data comparing two conditioning protocols for beta thalassaemia major in patients treated in our unit from 2005 to 2011. Twenty children aged between 2 and 9 years were treated using oral busulphan 16 mg/kg/day with cyclophosphamide 200 mg/kg/day were assigned to group one. Twenty children aged between 1 and 14 years were treated using thiotepa 8 mg/kg, treosulphan 42 gm/m2 and fludarabine 160 mg/m2 were assigned to group two. Data was analysed retrospectively for Lucarelli class, mucositis, blood product requirement, need for parenteral nutrition, engraftment and transplant related mortality. Group one had 4 class I, 10 class II and 6 class III patients between age groups 1 to 14 years. Mucositis was grade two and above in 11 children and they needed partial parenteral

Table 1.

Patient #	AGE	Induction pre 1st Transplant	Mobilization Regimen	First Transplant Type	Maintenance/Relapse treatment	Re-Induction	Interval between transplants (Years)
1	46	VAD X4 then Thalidomide for 1 year	Cytoxan/G-CSF	Single	Thalidomid then Lenalidomide maintenance	RVD × 3	8.57
2	66	VAD X4	Cytoxan/G-CSF	Planned Tandem	Dex/Thal followed by Bro/Doxil	MPV-Rituximab	4.77
3	56	Thal/Dex then Bro/Dex then MP	Cytoxan/G-CSF	Single	Dex/Thal then RVD×3 then VD-PACE	MPV-Rituximab ×2	4.43
4	67	Lenalidomide/Dex × 4	G-CSF	Single	Lenalidomide maintennace for 15 months	RVD × 4, VD-PACE ×2	1.75

X indicates number of cycles; RVD, lenalidomide, Bortezomib, Dex.; Thal, Thalidomide; MPV, Melphalan, Prednisone , Bortezomib; PACE, Cisplatin, Doxorubicin, Cytoxan, Etoposide; Bro, Brotezomib.